

## Abstract

Fiber-optic communications systems are provided for optical communications networks. Fiber-optic communications links may be provided that use spans of transmission fiber to carry optical data signals on wavelength-division-multiplexing channels at different wavelengths. Raman pump light may be used to provide Raman amplification for the optical data signals. The Raman pump light may be used to make measurements on the spans of transmission fiber. Raman pump light may be modulated to make optical time domain reflectometry measurements and measurements of the Raman gain coefficient in the fiber. Information on the measurements made using the Raman pump light may be used to control the Raman pump light during operation of the communications link and may be provided to a network management system.